DISCRETE MATHEMATICS - IIT ROPAR

PROF. SUDARSHAN IYENGAR

Department of Computer Science and Engineering

IIT Ropar

PROF. ANIL SHUKLA

Department of Computer Science and Engineering

IIT Dharwad

INTENDED AUDIENCE : Any Interested Learners

INDUSTRIES APPLICABLE TO : Every industry expects candidates to have good aptitude. This course sharpens the overall Quant skills.

COURSE OUTLINE :

The course will be an introduction to Discrete Mathematics which comprises of the essentials for a computer science student to go ahead and study any other topics in the subject. The emphasis will be on problem solving as well as proofs. We will be providing motivational illustrations and applications through out the course. The course doesn't assume any pre-requisites except for high school level arithmetic and algebra.

ABOUT INSTRUCTOR :

Prof. Sudarshan Iyengar, Associate Professor at the CSE at IIT Ropar has a Ph.D. from the Indian Institute of Science (IISc). An exemplary teacher who has delivered over 350 popular science talks to students of high school and advanced graduate programmes. Prof. Sudarshan has offered more than 100 hours of online lectures with novel teaching methodologies that have reached lakhs of Students. His research interests include Data Sciences, Social Computing, Social Networks, Collective Intelligence, Crowdsourced Technologies and Secure Computation.

Prof. Anil Shukla is an Assistant Professor in the Department of Computer Science & Engineering at IIT Ropar. He completed his Ph.D from the Institute of Mathematical Sciences, Chennai, India. His research interests lie in the areas of Computational Complexity, Proof Complexity, and Graph Theory.

COURSE PLAN :

Week 1: Counting

Week 2: Set Theory

Week 3: Logic

Week 4: Relations

Week 5: Functions

Week 6: Mathematical Induction and Pegionhole Principle

Week 7: Graph Theory - 01

Week 8: Graph Theory - 02

Week 9: Graph Theory - 03 and Generating Functions

Week 10: Principle of Inclusion-Exclusion

Week 11: Recurrence relations

Week 12: Advanced Topics